

CLAIMS

What is claimed is:

1. An electrical connector comprising:

electrical contacts comprising signal contacts and power contacts; and

a housing having the electrical contacts connected thereto, the housing comprising at least two vertically offset electrical plug receiving areas, wherein the signal contacts extend into the receiving areas in a universal serial bus (USB) electrical conductor location configuration, and wherein the power contacts extend into the receiving areas.

2. An electrical connector as in claim 1 wherein the signal contacts comprise spring contact sections extending into the plug receiving areas, tails extending from a bottom side of the housing, and bent sections therebetween.

3. An electrical connector as in claim 2 wherein the spring contact sections of the signal contacts extend into two of the plug receiving areas in opposite directions.

4. An electrical connector as in claim 1 wherein the power contacts comprise spring contact sections extending into the plug receiving areas, tails extending from a bottom side of the housing, and bent sections therebetween.

5. An electrical connector as in claim 4 wherein the spring contact sections of the power contacts extend into two of the receiving areas in respective opposite directions.
6. An electrical connector as in claim 1 wherein the housing comprises a section between two of the plug receiving areas, and wherein the power contacts extend from the section into the two plug receiving areas.
7. An electrical connector as in claim 1 wherein the electrical contacts extending into a first one of the plug receiving areas are arranged as a substantially mirror image to the electrical contacts extending into a second one of the plug receiving areas.
8. An electrical connector as in claim 1 wherein each plug receiving area comprises four of the signal contacts extending thereinto and two of the power contacts extending thereinto opposite the four signal contacts.
9. An electrical connector as in claim 1 further comprising an electrically conductive shell connected to the housing, the shell comprising contacts extending into the plug receiving areas.
10. An electrical connector as in claim 9 wherein the housing comprises projections extending into the receiving areas in a forward direction, portions of the signal contacts extending through cavities along the projections, and ends of the signal contacts being preloaded against sections of the projections.
11. A universal serial bus (USB) electrical connector comprising:

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a housing forming a plurality of USB plug receiving areas;

electrical signal contacts connected to the housing, and extending into the receiving areas, arranged for operably electrically connecting to the USB plugs inserted into the USB plug receiving areas; and

electrical power contacts connected to the housing and extending into the receiving areas, wherein the housing has a section between two of the receiving areas, and wherein the power contacts extend from the section in opposite directions into the two receiving areas.

12. A universal serial bus electrical connector as in claim 11 wherein the two receiving areas are vertically orientated relative to each other.

13. A universal serial bus electrical connector as in claim 11 wherein the electrical signal contacts extend into the receiving areas opposite the electrical power contacts.

14. A universal serial bus electrical connector as in claim 13 wherein the signal and power contacts extending into a first one of the receiving areas are arranged as a substantially mirror image of the signal and power contacts extending into a second one of the receiving areas.

15. A universal serial bus electrical connector as in claim 11 wherein the receiving areas extend into a front side of the housing, and wherein ends of the contacts extend from a bottom side of the housing.

16. A universal serial bus electrical connector as in claim 11 wherein the plug receiving areas are vertically aligned relative to each other, and wherein the electrical signal contacts and the electrical power contacts in the two receiving areas are arranged as substantially mirror images of each other.

17. A universal serial bus electrical connector as in claim 16 further comprising an electrically conductive shell connected to the housing, the shell comprising contact arms which extend into the two receiving areas in opposite directions.

18. An electrical connector comprising:

a housing having two plug receiving areas vertically offset relative to each other; and

electrical contacts connected to the housing and extending into the two plug receiving areas, the contacts comprising signal contacts and power contacts,

wherein the power contacts extend into the two receiving areas and the signal contacts extend into the two receiving areas, and wherein the signal and power contacts in a first one of the receiving areas are arranged in an array which is substantially a mirror image of the signal and power contacts in a second one of the receiving areas.

19. An electrical connector as in claim 18 wherein the housing comprises a section located between and separating the two plug receiving areas from each other.

20. An electrical connector as in claim 19 wherein the two plug receiving areas are vertically aligned relative to each other.
21. An electrical connector as in claim 19 wherein the power contacts extend from the section in opposite directions into the two receiving areas.
22. An electrical connector as in claim 21 wherein the signal contacts extend into the first and second receiving areas in respective opposite inward directions.
23. An electrical connector as in claim 18 further comprising an electrically conductive shell connected to the housing, the shell comprising contact arms extending into the two receiving areas from four sides of the connector.
24. An electrical connector as in claim 18 wherein the housing comprises two projections extending towards a front end of the housing above and below a center projection of the housing, and wherein the signal contacts extend through the two projections and project out of the two projections in opposite directions towards the center projection.
25. An electrical connector as in claim 24 wherein the power contacts extend through and out of the center projection in opposite directions into the two plug receiving areas.
26. A universal serial bus (USB) electrical connector receptacle for receiving a plurality of USB electrical connector plugs, the receptacle comprising:

PROOFS OF INVENTION

a housing having at least one plug receiving area; and

electrical contacts connected to the housing, the contacts comprising signal contacts and power contacts,

wherein the at least one plug receiving area is sized and shaped to receive the plurality of USB plugs with signal contact supporting decks of two of the plugs being located vertically offset relative to each other and power contact supporting sections of the two plugs being at least partially laterally adjacent each other.

27. A universal serial bus electrical connector receptacle as in claim 26 wherein the housing comprises two of the plug receiving areas, the two plug receiving areas being vertically aligned with each other.
 28. A universal serial bus electrical connector receptacle as in claim 27 wherein the signal contacts extend into the two receiving areas in a same direction.
 29. An electrical connector comprising:
 - a housing having at least one plug receiving area;
 - and
 - electrical contacts connected to the housing, the contacts comprising signal contacts and power contacts,

wherein the at least one plug receiving area comprises:

a first receiving area section sized and shaped to receive a first electrical plug having a signal contact supporting deck and a power contact section; and

a second receiving area section sized and shaped to receive a second electrical plug having a signal contact supporting deck and a power contact section,

and wherein at least one of the first and second receiving area sections is sized and shaped to alternatively receive a third electrical plug having a signal contact supporting deck, but not having a power contact section.

30. An electrical connector as in claim 29 wherein the at least one plug receiving area is sized and shaped to locate the power contact sections of the first and second electrical plugs laterally adjacent to each other.

31. An electrical connector as in claim 30 wherein the first and second receiving area sections are vertically aligned with each other.

32. An electrical connector as in claim 29 wherein the signal contacts and the power contacts extend into the first receiving area section in opposite directions.

33. An electrical connector as in claim 29 wherein the first and second receiving area sections each comprise a deck receiving area for receiving contact supporting decks of the first and second electrical plugs, and a common power contact section receiving area is located between the deck receiving areas.

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34. A universal serial bus (USB) electrical connector plug comprising:

a signal contact supporting deck;

electrical signal conductors directly stationarily attached to a first side of the supporting deck; and

electrical power conductors directly stationarily attached to an opposite second side of the supporting deck, wherein the supporting deck is sized and shaped to be inserted into a supporting deck receiving aperture of a USB electrical connector receptacle, and wherein the electrical signal conductors are aligned in a USB contact array configuration.